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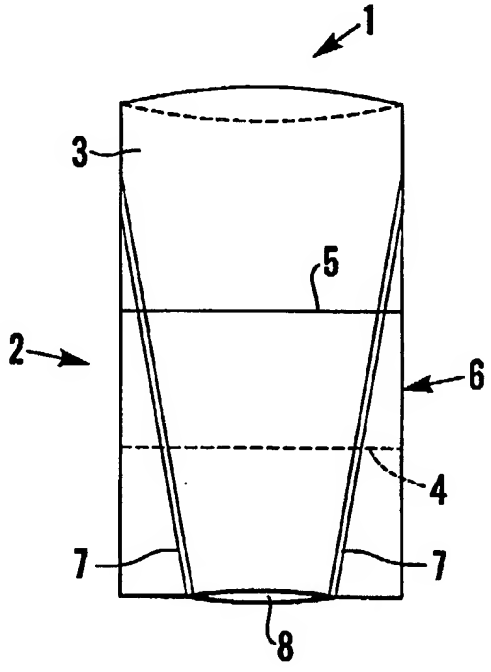
(54) **Title:** VALVE MEANS

(57) **Abstract**

A self–sealing valve (2), e.g. for a liquids dispenser, comprising an envelope (3) of flexible sheet material having opposed inlet and outlet portions and an intermediate portion (6) between the inlet and outlet portions, which intermediate portion comprises a spaced pair of transverse folds (4, 5) in the envelope (3) to restrict or prevent flow of fluent material, e.g. liquid, between the inlet and outlet portions, the arrangement being such that fluent material flow across the intermediate portion (6) can be induced by distortion of the intermediate portion, e.g. the application of pressure to the envelope (3) upstream of the intermediate portion, thus causing the seal created by the transverse folds (4, 5) to open to allow the material to pass. A liquids dispensing sachet (1) having a self–sealing valve (2) as described above and a wall–mounted dispenser (17) for liquids including such a sachet.



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VALVE MEANS

Technical Field

The invention relates to valve means, and more particularly, but not exclusively, to valve means for use in dispensing liquids from containers and to dispensers comprising such valve means.

Background Art

Liquid dispensers are known for dispensing liquid soap in washrooms and which consist of a wall-mounted device comprising a container for liquid soap and a hand operated plunger for dispensing shots or doses of the soap. Such devices are complicated, are comparatively expensive, are difficult to recycle because of the numerous materials used in each unit and are difficult to clean.

Disclosure of Invention

It is an object of the invention to provide a simple self-sealing valve, e.g. for a liquids dispenser.

It is among the objects of the invention to provide a washroom wall-mounted dispenser, e.g. for soap or hand

cleanser or the like, which is simple in construction and which is hygienic.

It is also among the objects of the invention to provide a disposable liquid container having integral dispensing means.

It is another object of the invention to provide a liquids dispenser of flexible plastics sheet, which is readily recyclable.

From one aspect the invention is valve means comprising an envelope of flexible sheet material having opposed inlet and outlet portions and an intermediate portion between the inlet and outlet portions, which intermediate portion comprises a transverse fold in the envelope to restrict or prevent flow of liquid between the inlet and outlet portions, the arrangement being such that liquid flow across the intermediate portion can be induced by distortion of the intermediate portion, e.g. the application of pressure to the envelope upstream of the outlet portion. The application of pressure to fluent material, e.g. liquid, in the envelope can thus cause the seal created by the transverse fold to open to allow the material to pass.

If desired, the intermediate portion may comprise a spaced pair of transverse folds. In this case each fold creates an openable seal. The spaced pair of folds may

define a Z-shaped formation in the envelope. The downstream fold may comprise flow restricting means, e.g. a nozzle. The envelope may be made from plastics sheet, and the flow restricting means may comprise a permanent seal, e.g. a heat seal or weld extending transversely of the envelope. The flow restricting means may comprise a pair of converging seals which form a nozzle portion between them. The seal or pair of seals may also be arranged to hold the fold(s) in the envelope.

An intermediate chamber may be formed upstream of the inlet portion, e.g. to form dose regulating means. The intermediate chamber may be formed by one or more seals across the envelope to define a liquid inlet into the intermediate chamber. The arrangement may be such that the liquid inlet into the intermediate chamber can be closed, e.g. by manual pressure applied by the user to the exterior of the envelope, after which the user can apply pressure to the intermediate chamber to evacuate the contents via the outlet, in a process akin to milking a cow.

The envelope may be tubular. The envelope may comprise a sachet for containing the fluent material, e.g. liquid to be dispensed. The valve means may be disposed in a dispensing section of the sachet, which dispensing section may be formed as a manually graspable teat.

Thus from another aspect the invention is a dispenser for liquids comprising valve means as described above.

From yet another aspect the invention is a dispenser for liquids comprising a sachet as described above.

The sachet may be arranged for personal use, e.g. for fixing to the user's clothing or may be arranged for fixing to a wall or the like mounted dispenser. The sachet may be provided with eyelets in a marginal flange for mounting on supporting pegs on the dispenser or other fixing device.

A wall mounted dispenser may be arranged to be readily detachable for cleaning. The dispenser may comprise a back plate arranged to present the manually graspable teat for convenient use, e.g. deflected away from the wall. The back plate may be supported on the wall on one or more pegs so as to be readily detachable therefrom. Preferably the same peg(s) support the backing plate and the sachet. Thus the pegs may be the only part of the dispenser permanently fixed to the wall as an aid in cleaning.

The backing plate may have a lever hinged thereto and which is arranged to overlie a sachet disposed against the backing plate to apply pressure to the sachet, preferably to the intermediate dosing chamber thereof, to dispense liquid from the sachet. The applied pressure may be such

as to close the inlet to the intermediate chamber to prevent upward displacement of the liquid and to ensure that the liquid is dispensed. The lever will be adapted for user operation, e.g. by the user's elbow.

Brief Description of Drawings

The invention is diagrammatically illustrated, by way of example, in the accompanying drawings, in which:-

Figure 1 is a sectional side view of a liquid containing sachet including a dispensing valve outlet in accordance with the invention;

Figure 2 is an enlarged scrap sectional side view of the dispensing valve outlet of Figure 1;

Figure 3 is a perspective view of a portion of tubular envelope used to form the sachet of Figure 1 and showing a step in the formation of the dispensing valve outlet;

Figure 4 is a front view of the portion of tubular envelope shown in Figure 3 and showing a further step in the formation of the dispensing valve outlet;

Figure 5 is a front view similar to that of Figure 4 and showing a modified form of sachet;

Figure 6 is a sectional view taken on the line X-X of Figure 5;

Figure 7 is a sectional side view similar to that of Figure 1 showing a modified sachet having an extended dispensing outlet section formed as a teat;

Figure 8 is an enlarged scrap sectional side view showing the teat portion of the dispenser of Figure 7;

Figures 9 and 10 illustrate steps in dispensing liquid from a device of the general kind shown in Figures 7 and 8;

Figures 11 and 12 correspond to Figures 9 and 10 and illustrate dispensing steps using a movable clamp;

Figure 13 is a perspective view of a wall-mounted dispensing device for use with a sachet, e.g. of the kind shown in Figure 7, and

Figure 14 is a side view of the dispenser shown in Figure 13.

Best Modes for Carrying Out the Invention

Referring to the drawings, and more particularly to Figures 1 to 4 thereof, there is shown a sachet (1) made of plastics film, which sachet is intended to contain liquid which can be dispensed through a dispensing valve outlet (2) formed at the bottom of the sachet as seen in Figure 1.

The sachet of Figure 1 is made from a length of a tubular plastics film (3) and the dispensing valve outlet

(2) is made by folding a lower portion of the tubular film as indicated in Figure 3 of the drawings to form a pair of folds (4, 5) of substantially Z formation and securing the folded portion (6) thus created against the sachet to hold the folds (4, 5) in position. This may be achieved as shown in Figure 4 with the aid of heat seals or welds (7) which may, if desired, converge to define an outlet nozzle (8) as shown in Figure 4. The folded portion (6) thus forms an intermediate portion defined by the folds, (4, 5) and which together form a valve with the fold (4) lying upstream and defining an inlet and the fold (5) lying downstream and defining an outlet.

After filling of the sachet with a liquid to be dispensed, the upper end (9) of the sachet will be closed, e.g. with a heat seal or the like to form the sachet (1). The pair of folds (4, 5) created at the base of the sachet prevent liquid from flowing from the sachet until pressure is applied to the sachet to distort the folded portion of the sachet to allow liquid to flow while the pressure is maintained.

Figures 5 and 6 illustrate a modified form of sachet (1) which comprises a sub-compartment (10) adjacent to the dispensing liquid outlet (2) and formed by one or more seals, e.g. heat seals, extending across the tubular envelope forming the sachet. In the drawings a pair of

seals (11) are shown which extend from opposite sides of the sachet and which define between them a small opening (12) communicating between a main sachet cavity (13) and the small sub-compartment (10). Thus the sachet may be used to dispense a measured quantity of liquid contained in the sub-compartment (10). This can be achieved by closing the opening (12) between the pair of seals (11), e.g. by manually applied pressure and then squeezing the sub-compartment to evacuate its contents through the dispensing valve outlet (2).

Figure 7 illustrates a modified form of sachet (1) in which the lower portion of the sachet is extended to form a teat (14) which is illustrated enlarged in Figure 8 of the drawings.

Figures 9 and 10 correspond generally to the arrangement of Figures 7 and 8 above, and show the effect of a sachet supported against a hard surface, e.g. a wall (not shown), so that it is flattened on one side (15). Figure 9 shows the formation of an intermediate chamber (10a) similar to that of the embodiment of Figures 5 and 6 by the application of external pressure to the teat at a position indicated by reference 25, e.g. by the user, and Figure 10 shows the intermediate chamber (10a) squeezed flat by the user to dispense its contents in a process similar to milking a cow.

Figures 11 and 12 illustrate that the same effect as that achieved by the arrangement of Figures 9 and 10 may be achieved by use of a movable clamp (16) positioned over the teat portion of the sachet instead of by the use of manual manipulation as shown in Figures 5 and 6.

Figures 13 and 14 illustrate a wall-mounted dispenser (17) for receiving a sachet (1) of the kind shown in Figures 7 and 8 and comprising a back plate (18) adapted to be secured to a wall by a pair of pegs (19) which may be screwed into a wall (20) so that the back plate is suspended removably on the pegs for cleaning purposes. The back plate has a lower extension (21) which projects away from the wall whereby a sachet (1) having eyelets (22) through an upper flange (23) can be hung on the said pegs (19) so that the sachet lies against the back plate with its extended teat portion (14) overlying the lateral projection (21) so that it is conveniently presented to the user's hands or the like. A lever (24) is hinged on the back plate to overlie the teat portion whereby pressure on the lever traps the teat against the back plate and closes the upper end of the teat portion so that progressive downward movement of the lever then causes pressure to be applied to the teat portion to expel liquid from the teat portion via the dispensing valve outlet (2). The device may therefore be used, e.g. to expel liquid in

to a suitable container or directly onto a user's hands, e.g. for hand cleaning purposes.

Industrial Application

The invention thus provides a simple liquids dispensing sachet and wall-mounted dispensing device therefor.

CLAIMS

1. Valve means (2) comprising an envelope of flexible sheet material (3) having opposed inlet and outlet portions and an intermediate portion (6) between the inlet and outlet portions, which intermediate portion comprises a transverse fold in the envelope (3) to restrict or prevent flow of fluent material, e.g. liquid, between the inlet and outlet portions, the arrangement being such that fluent material flow across the intermediate portion can be induced by distortion of the intermediate portion, e.g. the application of pressure to the envelope upstream of the outlet portion, thus causing the seal created by the transverse fold to open to allow the material to pass.

2. Valve means according to claim 1, wherein the intermediate portion (6) comprises a spaced pair of transverse folds (4,5), each fold thus creating an openable seal.

3. Valve means according to claim 2, wherein the spaced pair of folds (4,5) define a Z-shaped formation in the envelope (3).

4. Valve means according to any one of claims 1 to 3, wherein the envelope (3) is made from plastics film.

5. Valve means according to any one of claims 2 to 4, wherein the downstream fold (5) comprises flow restricting means, e.g. a nozzle.

6. Valve means according to claim 5, wherein the flow restricting means comprises a permanent seal (7), e.g. a heat seal or weld extending transversely of the envelope (3).

7. Valve means according to claim 5 or claim 6, wherein the flow restricting means comprises a pair of converging seals (7) which form a nozzle portion (8) between them.

8. Valve means according to claim 6 or claim 7, wherein the seal or pair of seals (7) may also be arranged to hold the fold(s) (4,5) in the envelope (3).

9. Valve means according to any one of the preceding claims, wherein an intermediate chamber (10) is formed upstream of the outlet portion, e.g. to form dose regulating means.

10. Valve means according to claim 9, wherein the intermediate chamber (10) is formed by one or more seals (11) across the envelope (3) to define a liquid inlet (12) into the intermediate chamber (10).

11. Valve means according to claim 10, wherein the intermediate chamber (10) is arranged such that the liquid inlet (12) into the intermediate chamber (10) may be closed, e.g. by manual pressure applied by the user to the exterior of the envelope (3), after which the user can apply pressure to the intermediate chamber (10) to evacuate the contents via the outlet.

12. Valve means according to any one of the preceding claims, wherein the envelope (3) is generally tubular in shape.

13. Valve means according to any one of the preceding claims, wherein the envelope (3) comprises a sachet (1) for containing the fluent material, e.g. liquid to be dispensed.

14. A sachet (1) for liquids comprising valve means (2) according to any one of claims 1 to 12.

15. A sachet (1) according to claim 14, wherein the valve means (2) is disposed in a dispensing section of the sachet (1).

16. A sachet (1) according to claim 15, wherein the dispensing section is formed as a manually graspable teat (14).

17. A sachet (1) according to claim 16, wherein an intermediate chamber (10a) is formed upstream of the outlet portion, e.g. to form dose regulating means, by the application of external pressure, e.g. by a user, at a position (25) along the teat (14), after which the user can apply pressure to the intermediate chamber (10a) to evacuate its contents via outlet (2).

18. A sachet (1) according to claim 17, wherein the external pressure used to form intermediate chamber (10a) and to evacuate its contents is achieved by manual manipulation of teat (14) or by the use of a movable clamp (16) positioned over the teat (14).

19. A dispenser for liquids comprising valve means (1) according to any one of claims 1 to 13.

20. A dispenser for liquids comprising a sachet (1) according to any one of claims 14 to 18.

21. A dispenser according to claim 20, wherein the sachet (1) is arranged for personal use, e.g. for fixing to a user's clothing, or is arranged for fixing to a wall or the like mounted dispenser.

22. A dispenser according to claim 21, wherein the sachet is provided with eyelets (22) in a marginal flange (23) for mounting on supporting pegs (19) on the dispenser or other fixing device.

23. A wall mounted dispenser (17) for use with a sachet (1) according to claim 16, comprising a back plate (18) arranged to present the manually graspable teat (14) for convenient use, e.g. deflected away from the wall (20).

24. A wall mounted dispenser according to claim 23, wherein the back plate (18) is supported on the wall (20) on one or more pegs (19) so as to be readily detachable therefrom.

25. A wall mounted dispenser according to claim 24, wherein the same peg(s) support the backing plate and the sachet.

26. A wall mounted dispenser according to any one of claims 23 to 25, wherein the backing plate (18) has a lever (24) hinged thereto which is arranged to overlie the sachet (1) disposed against the backing plate (18) and to apply pressure to the sachet (1) so that liquid is dispensed therefrom.

27. A wall mounted dispenser according to claim 26, wherein the pressure applied is such as to close the inlet to the intermediate chamber (10) to prevent upward displacement of the liquid and to ensure that the liquid is dispensed.

28. A wall mounted dispenser according to claim 26 or 27, wherein the lever (24) is adapted for user operation, e.g. by the user's elbow.

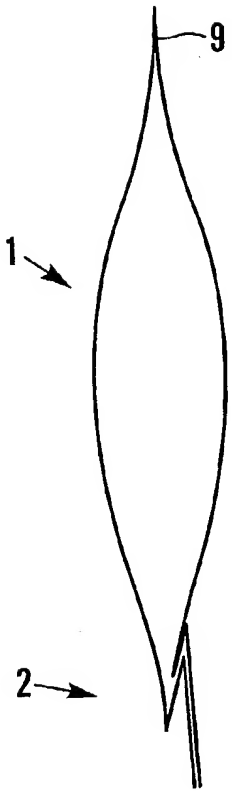

Fig.1

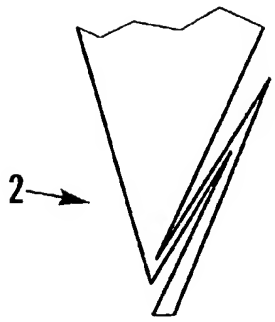

Fig.2

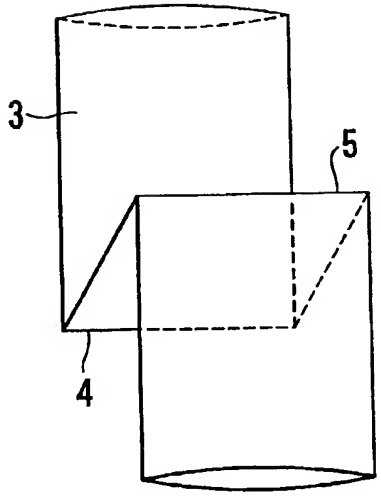

Fig.3

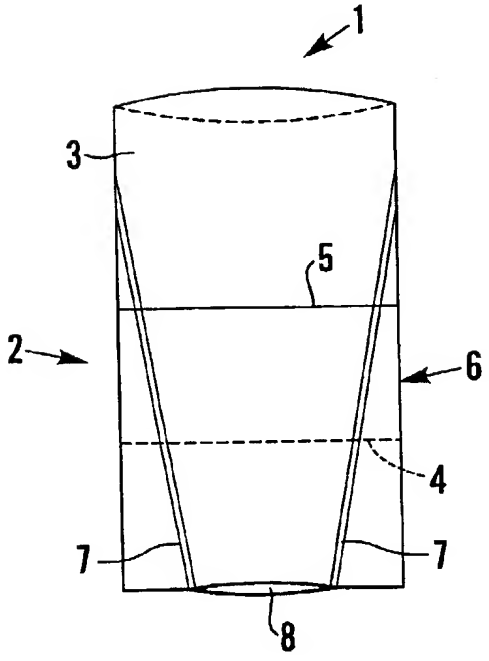

Fig.4

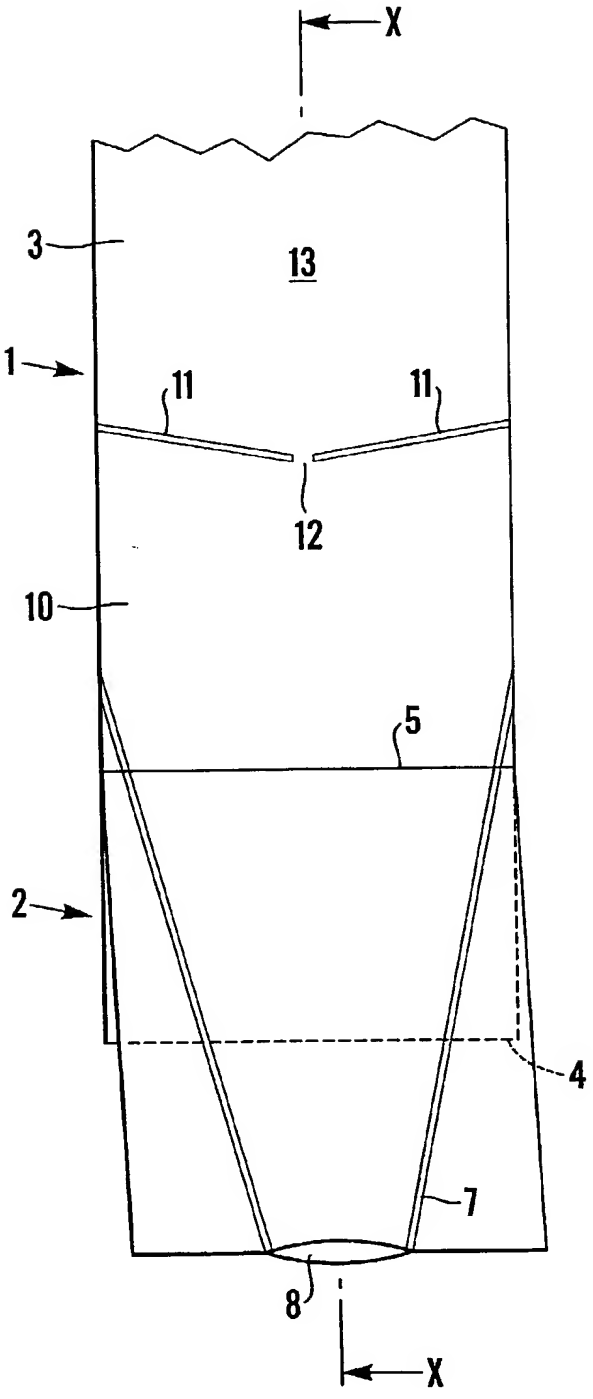

Fig.5

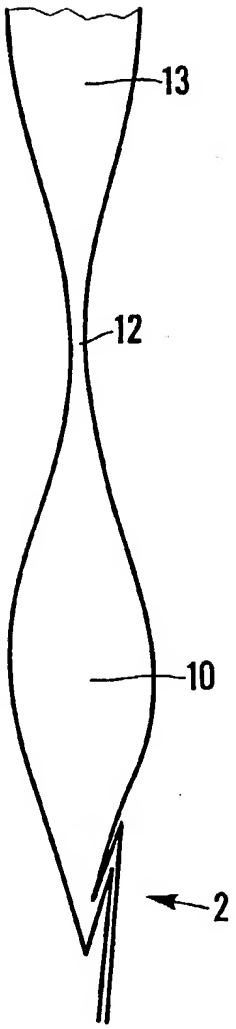

Fig.6

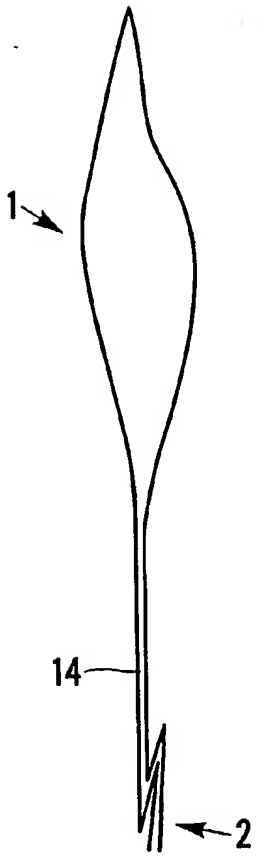

Fig.7

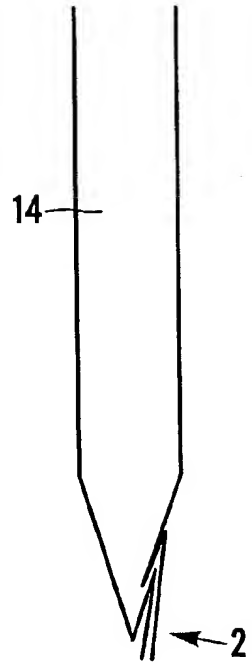

Fig.8

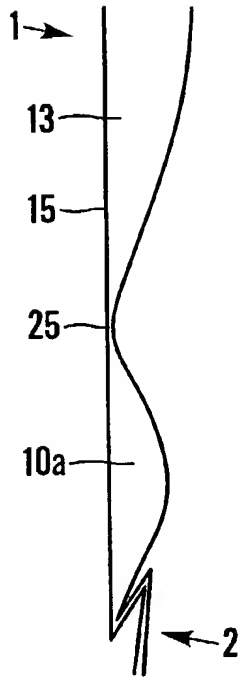

Fig.9

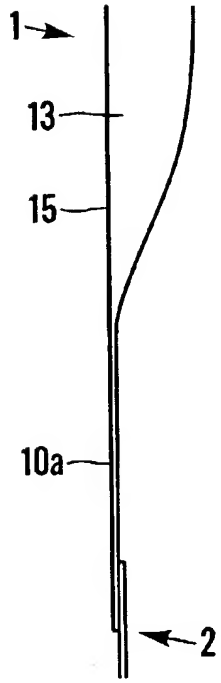

Fig.10

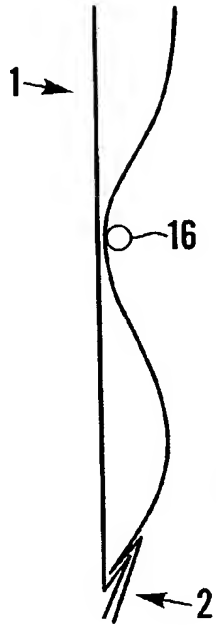

Fig.11

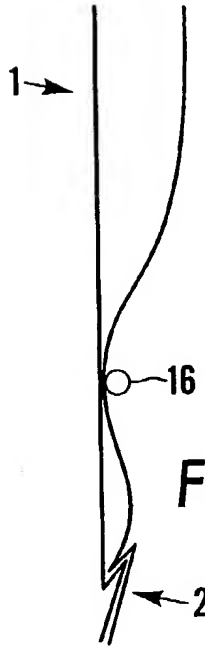

Fig.12

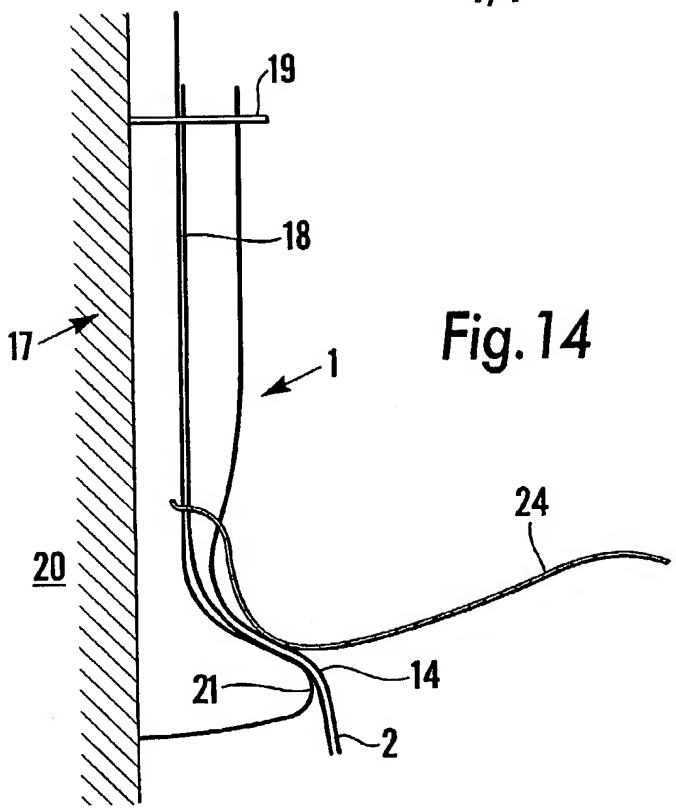

Fig. 14

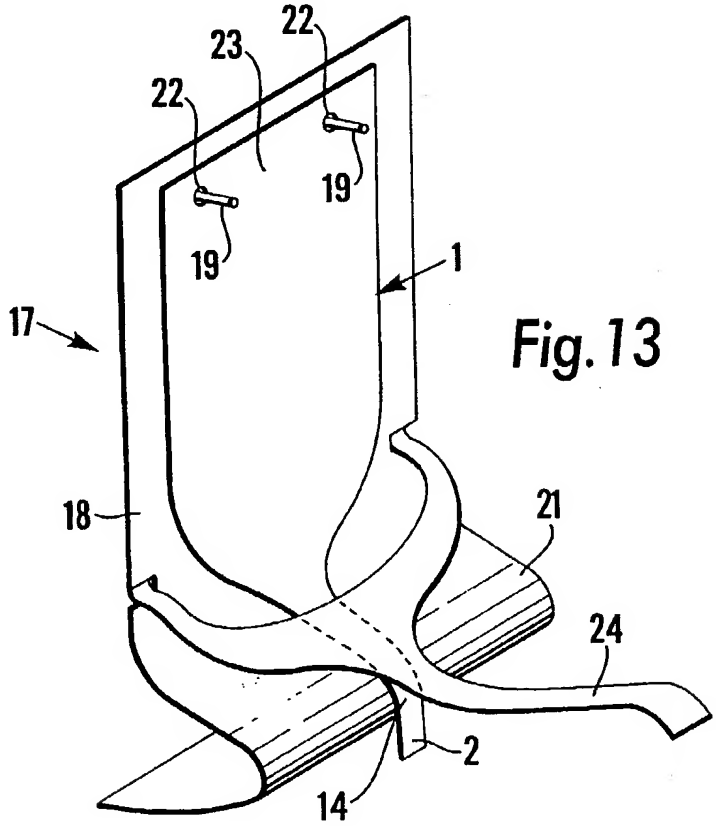

Fig. 13

INTERNATIONAL SEARCH REPORT

Internal Application No
PCT/GB 98/01985

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 A47K5/12 B65D75/58 B65D31/14

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 A47K B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 1 463 579 A (AMERICAN CAN COMPANY) 2 February 1977 see the whole document ---	1,4, 13-16, 19-21, 23,24
X	FR 1 196 939 A (R. ORSINI) 26 November 1959 see the whole document ---	1
A	EP 0 329 532 A (GROUPEMENT D'INTÉRÊT ÉCONOMIQUE ELIS) 23 August 1989 see the whole document ---	1,20-23, 26
A	US 4 564 127 A (M. E. GARABEDIAN ET AL) 14 January 1986 see the whole document --- -/--	1

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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7 October 1998	16/10/1998

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Intern al Application No
PCT/GB 98/01985

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